



Class 8 Important Formulas

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Chapter 7 - Cube and Cube roots

Cube Number

Numbers obtained when a number is multiplied by itself three times are known as cube numbers

Example

$$1=1^3$$

$$8=2^3$$

$$27=3^3$$

Some Important point to Note

S.no	Points
1	All cube numbers can end with any digit unlike square number when end with 0, 1, 4, 5, 6 or 9 at unit's place
2	if a number has 1 in the unit's place, then it's cube ends in 1.
5	Even number cubes are even while odd number cubes are Odd
6	There are only ten perfect cubes from 1 to 1000
7	There are only four perfect cubes from 1 to 100

Prime Factorization of Cubes

When we perform the prime factorization of cubes number, we find one special property

$$8= 2 \times 2 \times 2 \text{ (Triplet of prime factor 2)}$$

$$216 = (2 \times 2 \times 2) \times (3 \times 3 \times 3) \text{ (Triplet of 2 and 3)}$$

Each prime factor of a number appears three times in the prime factorization of its cube.

Cube Root

Cube root of a number is the number whose cube is given number

So we know that

$$27=3^3$$

Cube root of 27

$$\sqrt[3]{27} = 3$$

Cube root is denoted by expression $\sqrt[3]{\quad}$

How to Find cube root

Name	Description
Finding cube root through prime factorization	<p>This method, we find the prime factorization of the number.</p> <p>We will get same prime number occurring in triplet for perfect cube number. Cube root will be given by multiplication of prime factor occurring in pair</p> <p>Consider</p> $74088 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 7 \times 7 \times 7 = 2^3 \times 3^3 \times 7^3$ $\sqrt[3]{74088} = 2 \times 3 \times 7 = 42$
Finding cube root by estimation method	<p>This can be well explained with the example</p> <p>The given number is 17576.</p> <p>Step 1 Form groups of three starting from the rightmost digit of 17576.</p> <p>17 576. In this case one group i.e., 576 has three digits whereas 17 has only two digits.</p> <p>Step 2 Take 576.</p> <p>The digit 6 is at its one's place.</p> <p>We take the one's place of the required cube root as 6.</p> <p>Step 3 Take the other group, i.e., 17.</p> <p>Cube of 2 is 8 and cube of 3 is 27. 17 lies between 8 and 27.</p> <p>The smaller number among 2 and 3 is 2.</p> <p>The one's place of 2 is 2 itself. Take 2 as ten's place of the cube root of 17576.</p> <p>Thus,</p> $\sqrt[3]{17576} = 26$